

## Tropical American Plants, XI

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The manuscript for the beginning of Part IX of the "Flora of Guatemala." The Convolvulaceae through the Verbenaceae, is now ready for press. A portion of this paper has to do with the Convolvulaceae for that flora. The remainder is notes on other groups of plants studied during the course of the year.

Many of the specimens cited here have been loaned to me by Dr. C. L. Lundell, whose herbarium of material from Petén is especially rich. Dr. Peter Raven and Dr. Dennis Breedlove have sent me a portion of their collections from southern Mexico and Guatemala and included were very fine collections of *Ipomoea*, a genus often neglected by collectors. Elias Contreras of Petén, Guatemala has sent specimens and some of these are cited here. The collections of my associates and myself, those of our predecessors at Field Museum, and of Antonio Molina R. of Escuela Agrícola Panamericana find a prominent place among the specimens cited. Dr. George S. Bunting made an important gift of Nicaraguan material to Field Museum. The last species in this paper is from that collection.

I am appreciative of material loaned for study by U. S. National Herbarium, Gray Herbarium, New York Botanical Garden, the University of Wisconsin, the University of Michigan, and photographs from Royal Botanical Garden at Kew.

Friends—Dr. Fosberg, Dr. Shinners, Dr. Gunn—have been helpful in sharing knowledge, especially in the Convolvulaceae.

Miss Davida Simón has prepared the illustrations in this paper, as well as all those to appear in the forthcoming part of the flora.

The National Science Foundation has been especially important to us at Field Museum in making field work and research possible and profitable.

## APOCYNACEAE

***Echites cupulifera*** L. Wms. sp. nov.

Lianae robustae suffruticosae volubiles. Folia petiolata glabra vel leviter strigosa eglandulosa, laminae lanceolato-oblongae acuminatae base subobtusae,

petioli graciles puberulentes; inflorescentia cymosa vel dichasiosa axillaris vel terminalis; flos luteus; calyces lobis lanceolatis acutis leviter carnosus; corolla hypocrateriformis extus glabra, lobi breves; folliculi subparalleli.

Rampant vines, the stems relatively stout and woody, terete or somewhat angled, 6-7 mm. in diameter or less, glabrous, reddish on older branches, sparsely strigose, becoming glabrous. Leaves opposite, petiolate, glabrous or sparsely puberulent below, eglandular, the blade lanceolate-oblong, acuminate, somewhat obtuse at the base, paler below, with about 5 pairs of lateral veins, 7-13 cm. long and 3-5 cm. broad, the petioles slender, puberulent, about 1.3-2 cm. long, stipular ring (essentially interpetiolar) of several subglandular digitiform processes 0.7-0.9 mm. long; inflorescences axillary (or possibly terminal), a modified cyme or dichasium, few-flowered; flowers yellow, relatively large, pedicels slender, 2-4 cm. long, calyx at anthesis 4-5 mm. long, the lobes lanceolate, acute, somewhat cucullate and fleshy, the squamellae deeply dissected with the segments digitiform and about 0.5 mm. long, corolla salverform, glabrous inside and outside, except barbate in the tube below the anthers, about 5 cm. long, narrowly tubular at the base to the insertion of the anthers (1-1.5 cm. from base) then abruptly expanded and tubular, the lobes short and flaring, obtuse; anthers about 5 mm. long, bicaudate at the base, acute at the apex, narrowly lanceolate, an adjacent pair provided with long filamentose apical appendages about 9 mm. long, these entwined, the other anthers without apical appendages; nectaries surrounding the ovary joined, narrowly cupuliform, 2.5-3 mm. high and 2-2.5 mm. broad; style about 15 mm. long, reaching to the anthers, the stigmatic portion about 1.5 mm. long and subtended with an extended lamellate appendage; follicles 2, subparallel at maturity, to 20 cm. long or perhaps more.

Guatemala: bejuco, con vainas verdes, foresta de segundo crecimiento, en orillando aereopuerto, lado norte, Tikal, Parque Nacional, Depto. Petén, 5 noviembre de 1969, *Tún Ortiz 418* (type, F).

*Echites cupulifera* belongs in the subgenus *Euechites* (= *Echites*) section *yucatanenses* of Woodson's treatment of the genus (Ann. Mo. Bot. Gard. 23: 217-252. 1936). Woodson maintained six species in the genus and one more, *E. woodsoniana*, has been added by Monachino. The present species is most closely related to *E. yucatanensis* Millsp. but is distinguished by many details—the leaves larger, narrower and not so obtuse at the base; the inflorescence more open and the peduncles much longer; the upper part of the corolla tube much more open and the lobes of the corolla much shorter and not spreading; the anthers are most unusual in that two have long filamentose apical processes which are twisted together but the other three anthers are without these processes (no other species of *Echites* is known to have these processes, but they do occur in *Cameraria*); the calyx lobes are not acuminate and the squamellae are larger and more deeply dissected; the nectaries surrounding the ovary are cupuliform and much more prominent than in *E. yucatanensis*; the follicles subparallel rather than divaricate.



FIG. 1. *Echites cupulifera*. A, a branch,  $\times \frac{1}{2}$ ; B, calyx and pistil,  $\times \frac{1}{4}$ ; C, calyx dissected to show glands at the inner base of the lobes and the cupuliform nectary surrounding the ovary,  $\times 2\frac{1}{2}$ ; D, corolla dissected to show position of anthers, two of these with filiform apical appendages,  $\times 2\frac{1}{2}$ ; E, a stamen showing short, fleshy filament,  $\times 2\frac{1}{2}$ . Prepared by artist Marion Pahl from the type specimen.

**Thenardia galeottiana** Baill., Bull. Soc. Linn. Paris 2: 819. 1890; Woodson, Ann. Mo. Bot. Gard. 23: 275. 1936.

Mexico: Prov. de Oaxaca, *Galeotti 1565*; Iguala, Guerrero, Aug. 12, 1905, *Rose, Painter & Rose 9424*; flowers white, vine, steep wooded slopes on bank of Río Hondo 4 miles north of Jitolol on the road to Pueblo Nuevo Solistahuan, municipio of Jitolol, Chiapas, alt. 5,500 feet, August 20, 1965, *Breedlove 12046*.

This is an uncommon genus in Mexico and one in which the four known species, all Mexican, are easily divided into two quite different looking components. The present species is small flowered, as is *T. gonoloboides* Woodson. The other two species, including the type species, are large flowered.

I am placing the Breedlove specimen into *T. galeottiana* tentatively even though it has some characters that might seem to indicate that it is a distinct species.

## ASCLEPIADACEAE

### **Marsdenia gracilis** L. Wms. sp. nov.

Lianae graciles herbaceae glabrae. Folia lanceolata vel anguste lanceolata, longe acuminata, basi obtusa vel subtruncata, subtus glauca; petioli graciles; inflorescentia extra-axillaris, pedunculata, subumbellata; calyx lobi angusti ovati, acuti, glabri; corolla rotata vel campanulato-rotata, profunda lobata, intus dense piloso-pubescentis, lobi ovato-lanceolati, acuti; gynostegium generis; fructus ignotus.

Slender, herbaceous vines. Stems smooth and glabrous, 0.7–1.5 mm. in diameter, the internodes 4–8 cm. long, provided with intrapetiolar lines and these usually with 3–5 submammillate glands; leaves lanceolate to narrowly lanceolate, long acuminate, the base obtuse to subtruncate, glaucous beneath, blade (2–)3.5–7 cm. long and 1–2 cm. broad, with about 10–12 pairs of secondary nerves anastomosing near the margin, provided with 2–4 small mammillate glands at juncture of petiole, petioles slender, 1–2 cm. long; inflorescences extra-axillary, pedunculate, subumbellate, with up to 15 pedicellate flowers, peduncles slender and mostly 2–3 cm. long, pedicels slender, those on mature flowers about 1.5–2 cm. long; flowers white or pale yellow-green; calyx lobed to the base, the lobes narrowly ovate, acute, glabrous, about 2 mm. long and nearly 1 mm. broad; corolla rotate or campanulate-rotate, about 15 mm. broad, deeply lobed, the inner face densely pilose-pubescent with short erect hairs, especially along the recurved margins of the lobes, glabrous outside, the lobes ovate-lanceolate, acute, about 6–7 mm. long and 3–4 mm. broad, the tube very short, about 1 mm. long; gynostegium about 3 mm. high, the filaments connate into a short tube and forming a basal stipe, the corona hoods about 2 mm. long, subsaccate at the base and adnate to the stamen tube and dorsal surface of anthers, anthers provided with a small inflexed membrane at the apex; fruits unknown.

Costa Rica: corolla white, petals pale yellow-green, vine in dense wet secondary forest near Artezalea and Methodist Rural Center,

about 8 km. N.E. of Villa Quesada, Prov. Alajuela, alt. 550 m., Feb. 17, 1966, *Molina, Williams, Burger & Wallenta 17299* (type, F; NY; U.S.).

There are about 28 species of *Marsdenia* in Mexico, Central America, and Panama, these of quite diverse aspects. *Marsdenia gracilis* is related to a small group of species in northern Central America which includes *M. laxiflora* Donn.-Sm., *M. steyermarkii* Woodson, and *M. pinetorum* Standl. & L. Wms. The present species seems to be closest to the last of these, from which it is easily distinguished by large flowers and corollas pilose-pubescent within.

### *Marsdenia matudae* L. Wms. sp. nov.

Lianae herbaceae vel suffruticosae, glabrae. Folia suborbiculari-ovata, breviter cordata, acuminata, glabra, longe petiolata; inflorescentia extra-axillaris, puberulenta, racemosa vel cymosa; flos parva; calyx glabra, lobi lineari-lanceolati, acuti; corolla subrotata vel urceolata, lobi lanci-oblongi, acuti, piloso-barbellati; corona plusminusve 15-lobata; gynostegium stipitatum; folliculi ignoti.

Large herbaceous or suffrutescent vines, the stems glabrous or nearly so, terete, 3-5 mm. in diameter at origin of inflorescences. Leaves suborbicular-ovate, shallowly cordate, acuminate, with 3-5 pairs of prominent, arcuate, lateral nerves, glabrous, the blade 12-15 cm. long and 9-11 cm. broad, provided with 8-10 small glands at the apex of the petiole, petioles long, slender, glabrous, 5-7 cm. long; inflorescence extra-axillary, puberulent, a simple raceme to a compound cyme, the peduncle 5-6 cm. long, the flowering portion to 5 cm. long with or without secondary peduncles, the pedicels 2-3 mm. long; flowers small; calyx divided to the base, glabrous, provided with minute black glands, the lobes linear-lanceolate, acute, 2.5-3 mm. long and about 1 mm. broad, with small digitate process in the sinus of the lobes; corolla subrotate or urceolate, lobed to near the base, the lobes lance-oblong, acute, about 2.5 mm. long and 1.2 mm. broad, apical half reflexed, pilose-barbellate; faucal corona about 15 lobed, fleshy but thin, about 0.2-0.3 cm. high; gynostegium about 1.2 mm. high, and 2 mm. broad, stipitate; the stigma 5-angulate; pollinia about 1 mm. long, the gland minute, subcordate, the filaments subglandular, the pollen masses reniform but thicker at the free end, about 0.5 mm. long; follicles unknown.

Mexico: "Contua Simarón," in open margin of wet forest, Salto de Agua, Escuintla, Chiapas, alt. 400 m., Aug. 3, 1948, *Matuda 18395* (F, type).

Closely related to *M. stephanotidifolia* Woodson of adjacent Guatemala. It is easily distinguished by the much smaller flower; calyx lobes linear-lanceolate, 2.5-3 mm. long, not ovate and 5 mm. long; the corolla lobed to near the base, about 2.5-3 mm. long, not with tube as long as the lobes and to 11 mm. long.

Named for Prof. Matuda whose important collections are essential to an understanding of the flora of south Mexico.

**Matelea micrantha** L. Wms. sp. nov.

Herbae volubiles, elongatae, ramosae, puberulentes. Folia late ovato-cordata vel ovato-cordata, breviter acuminata, petioli graciles; inflorescentiae axillares, pedunculatae, subumbellatae vel racemoso-subumbellatae, pauciflorae, pedicelli graciles; calyx lobatus, lobi lanceolati, acuti; corolla rotata, 5-lobata, glabra, lobi late ovati, obtusi vel retusi; corona corollae 5-lobata, 5-excavata, humilis; folliculi subfusiformes, sine spinis.

Twining herbaceous vines, the plant puberulent with very short mostly erect hairs with some, especially in the inflorescence, subglandular purplish hairs characteristic of the genus. Leaves broadly ovate-cordate to ovate-cordate, the sinus narrow or the lobes overlapping, shortly acuminate, upper leaf surface finely puberulent (under lens), the lower one less so, 3-6 cm. long and 2-5 cm. broad, petiole slender, puberulent with mostly dark hairs, 1-5 cm. long; inflorescences axillary, mostly shorter than subtending leaf, pedunculate, subumbellate or racemose-subumbellate, few-flowered, puberulent, peduncles slender, 1.5-2.5 cm. long, pedicels up to 1 cm. long; calyx about 1.5 mm. long, lobate nearly to the base, densely puberulent, the lobes lanceolate, acute, about 1-1.3 mm. long and 0.6-0.7 mm. broad at the base; corolla rotate, deeply 5-lobate, about 5 mm. broad, greenish with reddish reticulations, glabrous, or sparsely puberulent outside, lobes broadly ovate, obtuse or retuse, about 1.5 mm. long and nearly as broad, faucal corona about 2 mm. across, 5-lobate and with 5 circular cavities, stigmatic surface stelliform, slightly recessed, about 0.8 mm. across; follicles subfusiform, sparsely long hirsute and puberulent, not tuberculate, about 9 cm. long.

Guatemala: flowers green-reddish, fruits green, vine, has milk, in a clearing at Macanché, Dept. Petén, Jan. 28, 1966, *Contreras 5417* (F, type, 2 sheets; US; NY; LL); flowers red and dark-greenish, vine on rocky hill 200 feet high 2½ km. north of the lake, Macanché. Dept. Petén, Feb. 7, 1966, *Contreras 5495* (F; US; NY; LL; MO).

This species is closely allied to *M. nigrescens* (Schlecht.) Woodson from Mexico from which it is easily distinguished by the glabrous, not long pilose inner face of the corolla; the corolla is smaller and the faucal corona is different; it lacks the strongly spreading hirsute pedicels of *M. nigrescens*. The species shares with *M. pusilliflora* L. Wms. the smallest flowers among the *Mateleas* with rotate corollas.

Specimens of this species came to hand just as the account of *Asclepiadaceae* for "Flora of Guatemala" was coming from the press.

## CONVOLVULACEAE

**Bonamia trichantha** Hallier f. Bot. Jahrb. 16: 528. 1893. *Trichantha ferruginea* Karst. & Triana, Linnaea 28: 438. 1856, non *Bonamia ferruginea* (Choisy) Hallier f. *Bonamia trichantha* var. *ovata* forma *glabrata* Myint & Ward, Phytologia 17: 220. 1968.

Costa Rica: flowers white, vine, rain forest area on Maxwell Cone's "El Volcán" farm at the junction of Río Angel and Río Volcán, El General Valley, Province of Puntarenas, alt. 450-500 m., February 2, 1963, *Williams, Jiménez & Williams 24208*.

New to Costa Rica, this is an extension from Panama and South America of the form of the species which has the leaves glabrate below. The genus has not been reported previously from Costa Rica.

EVOLVULUS.—Traditionally, *Evolvulus alsinoides* L. and *E. filipes* Mart. have been kept as separate species and Dr. van Oostroom (1934) in his monograph of the genus maintained them. He appended 15 varieties to *E. alsinoides*, four of these recorded from Guatemala. The differences between some of these varieties seem slight if not non-existent. Furthermore, I am not at all sure that *E. filipes* (which is said to have smaller corollas [3-4.5 mm. in diameter, not 5-7 mm.], sepals smaller, the leaves narrower and less pubescent, the pubescence of the stems appressed), can be distinguished from *E. alsinoides*. No one of the characters given is consistent, nor probably of much importance in this weedy group.

#### *Ipomoea anisomeres* var. *sagittiformis* L. Wms. var. nov.

A *I. anisomeres* Rob. & Bartl. differt folia minore sagittiformes pubescentes; lobi exteriori calycum majores; corolla lavendera.

Differs from the species in having small sagittiform leaves up to 8 cm. long with terminal lobe relatively narrow, 1-2 cm. broad; the exterior lobes of the calyx 3-5 mm. long, broadly ovate; corolla as in the species except lavender; capsule suborbicular, about 1 cm. long, the seeds subvelutinous and with long sericeous coma along the lateral margins, 5-6 mm. long.

Guatemala: corolla lavender, trailing on ground along road, between Mill 49.5 and ridge 6 miles from Izabal, Montaña del Mico, Dept. Izabal, alt. 65-600 m., April 1, 1940, *Steyermark 38485* (type F).

This variety is much like the species, except for the characters enumerated. The papillate stems characteristic of the species are found here. The stamens are toward the base of the corolla.

#### *Ipomoea armentalis* L. Wms. sp. nov.

Herbae volubiles graciles herbaceae vel suffrutescentes, caules puberulentes aut glabrescentes. Folia oblongo-ovata aut ovata, cordata, acuminata, leviter piloso-puberulentes, petioli graciles; inflorescentia uni- (bi-?) flora axillaris, pedunculi perbreves, pedicelli graciles, puberulentes, 1-4 cm. longi; calyx ca. 1.5 cm. longus, coriaceus, glabrus, lobi inaequales vel subaequales, oblongi aut oblongo-lanceolati; corolla anguste campanulata, atropurpurea; capsula lanceolato-ovoidea; semina subtrigona, nigra, puberulentes, margines laterales coma sericea pectinata ornati.

Delicate twining herbaceous or suffrutescent vines with puberulent or glabrescent stems to about 1 mm. in diameter. Leaves oblong-ovate to ovate, cordate, acuminate, pilose-puberulent on both surfaces, the blade 3–8 cm. long and 1.5–4.5 cm. broad, petiole slender, shorter than the blade; inflorescence axillary, 1- (rarely 2-) flowered, longer than the subtending leaf, peduncle 0.1–2 cm. long, puberulent, the slender pedicels 1–4 cm. long, puberulent; calyx about 1.5 cm. long at anthesis and in fruit, coriaceous, glabrous, the lobes unequal to subequal, oblong or oblong-oblancheolate, obtuse, 8–12 mm. long, with the outer lobes often shorter than the inner ones; corolla dark purple to blue, narrowly campanulate, about 5–6 cm. long, tip of bud puberulent, puberulent inside at insertion of filaments; anthers reaching to the middle of the corolla, the base of the filaments barbate; capsule lanceolate-ovoid, the thick style base persisting, 1.5–2 cm. long; seeds subtrigonal, black, puberulent over the whole surface, except the lateral margins with long coma of comb-like hairs, about 9 mm. long and 4 mm. broad.

Mexico: flowers blue, vine, steep slopes with *Quercus* and *Pinus* 3 miles south of Aguacatenango along the road to Pinola Las Rosas, municipio Venustiano Carranza, Chiapas, alt. 5,600 feet, October 17, 1965, *Breedlove & Raven 13435* (F, type, 2 sheets; DS).

Guatemala: "Guatemala," *Heyde 398* (US); damp thicket, small vine, scarce, corolla dull purple, the throat blackish purple, between Jutiapa and La Burrera, northeast of Jutiapa, alt. 800–850 m., Nov. 1, 1940, *Standley 76005* (F); "campanilla," damp thicket, small vine, corolla dull purple with very dark throat, between Jutiapa and La Calera southeast of Jutiapa, Dept. Jutiapa, alt. 850 m., Nov. 2, 1940, *Standley 76076* (F); damp quebrada, small vine, corolla very dark purple, mountains along road between Jalapa and San Pedro Pinula, Dept. Jalapa, alt. 1,400–1,800 m., Nov. 12, 1940, *Standley 77031* (F); wet thicket, large vine, La Joya de Limón east of Cuilapa, Dept. Santa Rosa, alt. 900 m., Nov. 25, 1940, *Standley 78299* (F); large woody vine, on dry, rocky, brushy hillsides, near Fiscal, Dept. Guatemala, alt. 1,100 m., Dec. 18, 1940, *Standley 80383* (F); corolla dark purple on inside, pale purplish outside, upper pine slopes along Río Tacó, between Chiquimula and Montaña Barriol, 3–15 miles northwest of Chiquimula, Dept. Chiquimula, alt. 500–1,200 m., Oct. 26, 1939, *Steyermark 30648* (F); "madre maíz," corolla purple with dark purple center, root is eaten, cooked and mixed with corn, between Nentón and Las Palmas, Sierra de los Cuchumatanes, Dept. Huehuetenango, alt. 800–1,200 m., August 30, 1942, *Steyermark 51600* (F; US).

Distinctive among the *Ipomoeas* of Mexico and northern Central America because of the short (usually) single-flowered inflorescences; the pectinate coma on the lateral margins of the seed. The thickened base of the style persists on the capsule and has a disc-like struc-



ture at its summit. The species is related to *I. nicoyana* House described from the Pacific lowlands of Costa Rica.

***Ipomoea aurantiaca* L. Wms. sp. nov.**

Herbae glabrae graciles. Folia oblongo-lanceolata, acuminata, basi truncata, submembranacea, petioli pergraciles; inflorescentiae axillares usque ad longitudine foliorum aut longiores, pauciflorae; calyx 8–10 mm. longus, lobi inaequales, late ovati vel suborbiculares, obtusi, coriacei; corolla aurantiaca, tubulari-campanulata, lobi late ovati; capsulae ignotae.

Delicate twining glabrous herbs with stems to about 2 mm. in diameter. Leaves oblong-lanceolate, acuminate, truncate at the base, membranaceous or submembranaceous, the blade when mature 4–7.5 cm. long and 1.5–3 cm. broad, the petiole very slender (0.4 mm. in diameter), 1–1.5 cm. long; inflorescences axillary, about as long as or longer than the subtending leaves, few-flowered, basically cymose, the peduncle almost as thick as the stem, 2.5–7 cm. long, the pedicels slender, somewhat furfurescent, mostly less than 2 cm. long; calyx about 8–10 mm. long, the lobes unequal, broadly ovate to suborbicular, obtuse, coriaceous, the outer ones somewhat furfurescent dorsally, 4–6 mm. long, the inner lobes 8–10 mm. long, the margins chartaceous; corolla orange, tubular campanulate, glabrous, 5–6 cm. long and about 1 cm. in diameter near the throat, lobes broadly ovate, about 1 cm. long; capsules unknown.

Mexico: vine, flowers orange, wooded slope near the crest of ridge, 2 miles south of Tuxtla Gutiérrez along road to Villa Flores, municipio Tuxtla Gutiérrez, Chiapas, elevation 2,800 feet, October 16, 1965, *Breedlove & Raven 13362* (F, type; DS).

This species has several characters which distinguish it from all of the species that I know. No other species in our region has orange-colored flowers; the submembranaceous leaves that are narrow and truncate at the base are unusual; the very narrow corolla is unusual but similar to that in some of the red-flowered species of the *Ipomoea purga* alliance, although the limb of the corolla is broad in those species.

***Ipomoea bombycina* (Choisy) Benth. & Hook., Gen. Pl. 2: 873. 1876. *Bombycospermum mexicanum* Presl, Rel. Haenk. 2: 137, t. 71. 1835. *Batatas bombycina* Choisy, DC. Prodr. 9: 340. 1845.**

Mexico: *Haenke 1435* (F); *Palmer 370* (F).

The fragmentary Haenke specimen may be authentic and matches the Palmer specimen very closely. Both would fit into Presl's description, with exceptions, but the illustration seems to show a terminal inflorescence as Presl specified. Our specimen has no attached inflorescence and perhaps the type had none either so that Presl assumed that it was terminal instead of axillary. The Palmer specimen has both flowers and fruits.

***Ipomoea breedlovei* L. Wms. sp. nov.**

Herbae volubiles graciles glabrae. Folia late ovata, cordata, caudata vel acuminato caudata, petioli graciles; inflorescentia pluriflora, cymosa; calycis lobi subaequales, ovati vel suborbiculares, apices rotundati, basi tentaculifera; corolla infundibuliformis stamina et stylus perbreves; capsula ignota.

Twining herbaceous vines with slender stems, completely glabrous except tips of corolla. Leaves broadly ovate, cordate, caudate or caudate-acuminate, 6–8 cm. long when mature and 4–6 cm. broad, the caudate tip to 1 cm. long, petioles slender, mostly 3–4 cm. long; inflorescence a several-flowered pedunculate cyme, the peduncles axillary, thicker than the petioles, 2–5 cm. long; terminating pedicel (when distinguishable) of the cyme longest, to 3 cm. long and somewhat inflated; calyx lobes 6–8 mm. long, subequal, ovate to suborbicular, the apices rounded, the outer ones with prominent but short fleshy processes toward the base; corolla purple, funnellform, 6–8 cm. long, the base contracted, stamens and style short, reaching to about 2.5 cm. above base of corolla, sericeous-puberulent, noticeably so in the buds; capsules unknown.

Mexico: flowers purple, vine, wooded slope 5 km. north of Tuxtla Gutiérrez along road to El Sumidero, Municipio of Tuxtla Gutiérrez, Chiapas, alt. 2,200 feet, October 18, 1965, *Breedlove & Raven 13517* (DS; F); flowers purple, vine, steep wooded slope 9 km. north of Tuxtla Gutiérrez along road to El Sumidero, Municipio of Tuxtla Gutiérrez, Chiapas, elevation 2,500 feet, October 27, 1965, *Breedlove & Raven 13871* (F, type; DS).

This species is obviously closely related to *I. tentaculifera* Greenm. but with shorter and more fleshy processes on the calyx; the inflorescence is a several to many-flowered cyme while that of *I. tentaculifera* is reduced to one or two flowers. The caudate apices of leaves found in these two species are not common among our species.

I am pleased to name this handsome species for Dennis Breedlove whose collection of south Mexican *Ipomoeas* is outstanding.

***Ipomoea callida* House, Muhlenbergia 3: 42, t. 3. 1907. *Ipomoea wilsonii* House, l.c. t. 1.**

Guatemala: *Friedrichsthal s. n.* (photo F 31905, from W); swampy places between Puerto Barrios and Santo Tomás, Dept. Izabal, alt. 5–20 m., Jan. 2, 1942, *Steyermark 42036* (F; US).

British Honduras: vine, corolla pink, edge of hammock in pine ridge, Swasey branch, Monkey River, Toledo district, Dec. 30, 1941, *Gentle 3850* (F); "comotillo," vine, flowers pink, in broken ridge, near San Antonio, Toledo District, Dec. 3, 1945, *Gentle 5450* (LL).

Honduras: Vicinity of Tela, Dept. Atlántida, sea level, 1927–1928, *Standley 54711* (F); Puerto Sierra, Feb. 21, 1903, *Wilson 530* (type

of *I. wilsonii*, NY); Puerto Sierra, Feb. 21, 1903, *Wilson 534* (type of *I. callida*, NY).

The types of these two species came from the same locality on the north coast of Honduras and were collected on the same day. I suspect that both are the same species but the type of *I. wilsonii* no longer has flowers. The species occurs as well in the adjacent coastal plain in Guatemala and a specimen collected by Fredrichsthal from an unspecified place in Guatemala is the same. A photograph of the type is available from Field Museum.

The specimens from British Honduras are quite densely pubescent (and with either sagittate or ovate leaves). Otherwise they seem to be very similar to the glabrous type.

***Ipomoea capillacea*** (HBK.) G. Don, Gen. Syst. 4: 267. 1838.  
*Ipomoea muricata* Cav. Icon. 5: 52, t. 478, fig. 2. 1799, non Jacq. 1798.  
*Convolvulus capillaceus* HBK. Nov. Gen. & Sp. Pl. 3: 97. Feb. 1819.  
*Ipomoea armata* Roem. & Schult. Syst. 4: 214. Spring 1819. *Ipomoea muricatisepala* Matuda, An. Inst. Biol. Mex. 34: 124. 1964, *nom. illeg.*

This species, which occurs from the southwestern United States through Mexico and Central America to Panama and northwestern South America, has usually gone under the name of *Ipomoea muricata*. The oldest name for the plant after that of Cavanilles is *Convolvulus capillaceus*, a name which antedates *I. armata* by a few months.

A photograph of *Humboldt 2066* presumed to have been the type of *Convolvulus capillaceus* is available (F 13799).

### ***Ipomoea contrerasii* L. Wms. sp. nov.**

Herbae volubiles, caules petioli et pedunculi hirsuti; folia late ovato cordata, breviter acuminata, glabra, submembranacea, petioli graciles, hirsuti; inflorescentiae axillares, uniflorae, pedunculi 4-5 cm. longi, hirsuti; pedicelli tumidi aut inflati, glabri; sepala chartacea margine membranaceo, aequales, anguste oblongo-lanceolata, acuta: corolla azurea, campanulata, glabra, pergrandis; capsula ignota.

Twining herbaceous vines, the slender stems, the petioles and the peduncles with long spreading hirsute pubescence, the hairs mostly 4-5 mm. long. Leaves broadly ovate cordate, short acuminate, with 6-8 pairs of lateral nerves, the blade 8-12 cm. long and 7.5-10 cm. broad, glabrous, submembranaceous, cordate base very open, the petioles slender, hirsute, 9-11 cm. long; inflorescence axillary, 1-flowered, the peduncles 4-5 cm. long, hirsute, pedicels 3-4.5 cm. long, swollen upward (inflated?), glabrous, 4-5 mm. in diameter at the apex; sepals chartaceous, the margins thin and membranaceous, about equal in length, narrowly oblong-lanceolate, acute, 2.5-3 cm. long and 0.8-1 cm. broad; corolla blue, cam-

panulate, the limb rotate, 10–12 cm. long at anthesis, glabrous, stamens inserted about 2.5 cm. above the base of the corolla, the filaments bearded at the base, the anthers reaching to about the middle of the corolla (about 5 cm. from the base); capsule unknown.

Guatemala: “quiebra cajete,” vine, flowers blue, bordering Arroyo Paxcamán, Uaxactun, Petén, Dec. 20, 1963, *Contreras 3640* (type, LL).

Related to *I. sessilis*, described below and to *I. santae-rosae* Standl. & Steyerl. It is easily distinguished from these by the large oblong-lanceolate sepals, very large flowers and leaves, and the hirsute stems, petioles and peduncles.

I am pleased to name this attractive species for Mr. Contreras whose excellent specimens have increased our knowledge of the flora of Petén.

***Ipomoea dumosa*** (Benth.) L. Wms. comb. nov. *Exogonium dumosum* Benth. Pl. Hartw. 46. 1840.

Mexico: in thickets, San Cornelio, *Hartweg s. n.* (Kew negatives 10893–4); vine in woods, Manchón, Mina, Guerrero, alt. 1,200 m., Sept. 10, 1936, *Hinton 9479* (US); flowers red, vine in barranca, Temascaltepec, Temascaltepec, Mexico, Oct. 10, 1937, *Hinton 11207* (US).

I have not seen the type specimen (there are two sheets) but have photographs of them which Dr. Taylor at Kew has been kind enough to send. The Hinton specimens match almost exactly the photographs of the type and Bentham's description, except that one specimen is almost completely glabrous while the other (9479) is more pubescent than specified, variations commonly found in *Ipomoea*. The species is closely allied to *I. purga*, as Bentham has pointed out, but is a species of the highlands with smaller flowers and other minor details to distinguish it.

***Ipomoea flavida*** L. Wms. sp. nov.

Herbae graciles volubiles, caules puberulentes, usque ad 2 mm. diametralis. Folia ovata, base leviter cordata, apice acuminata, glabra vel veniis puberulentes, petioli graciles, puberulentes; inflorescentia brevis, axillaris, corymbiformis, vulgo 5–7-flora, pedunculi 0.2–2 cm. longi, pedicelli graciles; calyx ca. 12 mm. longus, lobi elliptico-oblongi, obtusi, coriacei, subaequales; corolla anguste infundibuliformis, sulphurea, glabra, ca. 4–5 cm. longa; capsulae et semina ignotae.

Slender herbaceous vines with minutely puberulent stems to about 2 mm. in diameter. Leaves ovate, the base shallowly cordate, apex acuminate, glabrous or puberulent along or on the veins, principal lateral veins mostly 5 alternate pairs,

blade 3.5–11 cm. long and 2–7.5 cm. broad, petioles slender, puberulent, 2–6 cm. long; inflorescence axillary, corymbiform, mostly 5–7-flowered, shorter or subequal to the subtending leaves, peduncles 0.2–2 cm. long; the pedicels slender, at anthesis about 2–2.5 cm. long; calyx about 12 mm. long, the lobes elliptic-oblong, obtuse, coriaceous, subequal, and 3–4 mm. broad, the outer dorsally puberulent or pilosulose, the inner glabrous or nearly so; corolla narrowly infundibuliform, bright sulphur-yellow, glabrous except tip of lobes, about 4.5 cm. long and 1.5 cm. broad, contracted to a short narrow tube at the calyx, anther reaching to about the middle of corolla, about 5 mm. long, the style reaching middle of the corolla; capsule and seeds unknown.

Guatemala: "Bl. hell schwefelgelb," Panzal, Baja Verapaz, alt. 1,000 m., October, 1912, *von Turckheim 3930* (type, US).

The type specimen was originally in John Donnell Smith's herbarium but was not determined by him, nor had anyone else named the plant.

The species belongs somewhat near to *Ipomoea aurantiaca* described above. The two species, so far as I know, are the only large flowered species with orange or yellow flowers to be found in southern Mexico and Central America. *Ipomoea flavida* is easily distinguished from *I. aurantiaca* by the subequal calyx lobes and the several-flowered inflorescence.

The locality on the label "Panzal" should read Pansal, a small village about 11 km. from Purulhá, Baja Verapaz.

*Ipomoea indica* var. *variabilis* (Schlecht. & Cham.) L. Wms. comb. nov. *Convolvulus variabilis* Schlecht. & Cham. Linnaea 5: 116. 1830. *Ipomoea variabilis* Choisy in DC. Prodr. 9: 383. 1845. *Ipomoea mitchellae* Standl. Field Mus. Bot. 8: 39. 1930.

Known to occur in Mexico—from whence the type, Guatemala and Honduras. The variation is an unimportant one differing from var. *indica*, which is widespread, in having more prominent setose or subsetose hairs at the base of the calyx lobes. Three collections are known from Guatemala, as follows:

Guatemala: corolla rose-purple, moist thickets near Escuintla, Dept. Escuintla, alt. 135–300 m., Jan. 31, 1939, *Standley 63956*; herbaceous vine, common in damp thickets, road between Masagua and San José, Dept. Escuintla, alt. 75 m. or less, January 30, 1939, *Standley 64108*; vine, forested flats between Ocos and Ayutla, alt. 5–20 m., March 15, 1940, *Steyermark 37907, in part*.

*Ipomoea microsticta* Hallier f. Bull. Herb. Boiss. ser. 1, 7: 411. 1899. *Ipomoea glabriuscula* House, Bot. Gaz. 43: 409. 1907.

Both of these names so far as I know were limited to Guatemalan material and both of them were obscure—or at least misunderstood. Hallier's type of *L. microsticta* was probably burned at Berlin. There may be other specimens of *Seler & Seler 2427* in existence in which case the specimen could be designated lectotype.

The type of *Ipomoea glabriuscula* House is in Washington and is a rather poor specimen not very well described by House.

Hallier's description is detailed and leaves little doubt that the specimens cited below are the plant which he had. I know of no other species in Guatemala that has abundant black "glandular" dots, visible under the lens, on the lower surface of the leaf.

Guatemala: *Hayes s. n.*; *Heyde s. n.* (type, US); *Seler & Seler 2427* (not seen); *Johnston 1035*; *Standley 58100, 58159, 62243, 75177, 75886, 76010, 77744, 78905*.

All except the first three of these specimens are in Field Museum. All of ours collected by Johnston and by Standley had been annotated as *I. phillomega* (Vell.) House by Standley and are one of three components that Standley had included in that species in the preliminary manuscript of the "Flora of Guatemala." I have seen and annotated specimens from Mexico, British Honduras, and Costa Rica, in addition to those from Guatemala.

***Ipomoea pauciflora*** Mart. & Gal. Bull. Acad. Brux. 12, 2: 266. 1845; Walp. Rep. 6: 532. 1847. *Ipomoea wolcottiana* Rose, Gard. & For. 7: 367, f. 39. 1894; House, Ann. N. Y. Acad. Sci. 18: 191. 1908. *Ipomoea populina* House, Ann. N. Y. Acad. Sci. 18: 226. 1908.

To the best of my knowledge, this most attractive white-flowered woody vine is distributed sparsely from Mexico to Guatemala, is exceedingly abundant in certain very dry areas of central Honduras, and extends into Nicaragua where it is uncommon. In Honduras it is in flower at the end of the rainy season well into the dry season, end of November into February.

House, in his "The North American Species of the Genus *Ipomoea*" (Ann. N. Y. Acad. Sci. 16: 181–263. 1908), accounted for this species in two places as indicated in the synonymy above, but the older name of Martens and Galeotti is under "Species Inquirendae" and consequently not known to House. Most specimens will be found in the herbaria under *Ipomoea populina*. There is available in Field Museum a photograph (F27026) of the type at Geneva, and a fragment from the type specimen which is *Galeotti 1403*.

***Ipomoea perplexa* L. Wms. sp. nov.**

Herbae graciles volubiles glabrae. Folia anguste vel late ovata, cordata, acuta vel acuminata, integra, dentata vel trilobata, petioli laminibus aequalibus; inflorescentiae axillares, pauci-pluriflores, corymbiformes; calyx coriaceus, glabrus, lobi subaequales, oblongi, oblongo-obovati vel obovati, obtusi vel truncati, marginibus leviter chartacei; corolla rosea vel purpurea, parva, anguste infundibuliformis, filamenta basi barbata; stigma globosa vel biglobosa; capsulae subglobosae glabrae; semina negra aut fusca, glabra.

Slender twining herbaceous vines, stems about 1 mm. or less in diameter, glabrous. Leaves glabrous, small, narrowly ovate to broadly ovate in outline, cordate, acute or acuminate, blade entire, dentate to trilobulate, 1.5–6 cm. long and 0.6–4.5 cm. broad, petioles short to about as long as the blade; inflorescence an axillary few-several-flowered corymb, peduncles about as thick as the stem, 1.5–6 cm. long, pedicels relatively stout, less than 1 cm. long; calyx coriaceous, glabrous, the lobes subequal, about 4 mm. long, the outer ones usually somewhat shorter, oblong to oblong-obovate or obovate, obtuse or truncate, the margins somewhat chartaceous, usually with a minute inframarginal apicule at the center; corolla small, pink or purple, narrowly funnellform, glabrous outside, 14–18 mm. long, stamens inserted near the base of the corolla, unequal, reaching to about the middle, anthers 1–1.2 mm. long, filaments bearded at the base, stigma globose (or biglobose), large, about 0.8 mm. broad; capsule glabrous, subglobose, about 4–5 mm. long; seeds brown or black, glabrous, smooth.

Guatemala: vine, flowers lilac, on Río Mopán trail east of village, Dolores, Petén, May 12, 1961, *Contreras 2282* (LL); vine, flowers lilac, in forest west of km. 145 of road, La Cumbre, Petén, March 3, 1967, *Contreras 6648* (LL).

British Honduras: flowers purple, Yaloch to El Cayo, May 3, 1931, *Bartlett 12868* (MICH, type; F); Middle Camp, Edwards Road beyond Columbia, Toledo District, Feb. 19, 1948, *Gentle 6418* (LL); Hutes Creek, Edwards Road beyond Columbia, Toledo District, Feb. 12, 1951, *Gentle 7200* (LL); Cohune ridge near St. Margaret Creek, Humming Bird Highway, El Cayo District, May 25, 1955, *Gentle 8725* (LL); 40-Mile section, Humming Bird Highway. El Cayo District, July 15, 1955, *Gentle 8797* (LL); 47-Mile section, Humming Bird Highway, El Cayo District, Sept. 6, 1955, *Gentle 8862* (LL); Cave Branch section, Humming Bird Highway, El Cayo District, Feb. 18, 1956, *Gentle 9025* (LL).

Honduras: near Pito Solo, Lake Yojoa, Dept. Comayagua, alt. 630 m., April 15, 1951, *Williams & Molina 18042* (F; EAP).

This small-flowered species belongs in the Section *Batatas*, subsection *Microsepalae* of House's treatment of *Ipomoea* (Ann. N. Y. Acad. Sci. 18: 181–263. 1908). That subsectional division is quite artificial, however, and the relationship seems to be with *I. triloba* L.

It is distinguished by the obtuse and small glabrous sepals and the very small flowers. The group to which the species belongs is a complicated one but I do not believe this belongs in the rather broad concept of *I. triloba*. Monographic study of this genus is much to be desired.

***Ipomoea phillomega*** (Vell.) House, Ann. N. Y. Acad. Sci. 18: 246. 1908. *Convolvulus phillomega* Vell. 74 (text). 1825. *Convolvulus phillomega* Vell. Icones 2: t. 63. 1827.

The text and plate cited are not adequate to determine an *Ipomoea* with any certainty. Dr. O'Donell has determined some of our material from Mexico and Panama as this species, which, in fact, resembles the illustration of Vellozo. The material from Guatemala, all determined by Standley, is, I think, another species, *I. microsticta* Hallier f.

***Ipomoea purpurea*** (L.) Roth, Bot. Abh. 27. 1787. *Convolvulus purpureus* L. Sp. Pl. ed. 2, 219. 1762. *Pharbitis diversifolia* Lindl. Bot. Reg. 23: t. 1988. 1837. *Ipomoea purpurea* var. *diversifolia* O'Donell, Lilloa 26: 385, fig. 1953.

A common and often weedy species of *Ipomoea*, a pest in corn and potato fields in the United States but not known to be a nuisance in Guatemala. The leaves of this species are either cordate and entire or 3-5-lobate. Dr. O'Donell has separated the form with lobate leaves as variety *diversifolia*. This seems hardly justified since entire or lobate leaves are to be found on the same stem. Lindley comments that the garden plant which he had produced "at the later part of the year 3-lobed leaves, instead of entire ones, so that specimens collected at different seasons would be thought essentially different."

***Ipomoea sepacuitensis*** Donn.-Sm. Bot. Gaz. 56: 59. 1913.

This rather large and coarse *Ipomoea* is known only from Alta Verapaz and British Honduras at rather low elevations, 200-500 meters. Standley has annotated the type as *Ipomoea setosa* Ker and two collections by Steyermark (44999 and 45121) as two different species of *Calonyction*; a fourth specimen, *Schipp* 874, from British Honduras has been named as *I. setosa* "var." *campanulata* (Hallier f.) House. There seems to be no question that it is a valid species. A Quecchí name, *Ixcajen*, is reported for the type.

*Calonyction campanulatum* Hallier f. Bull. Herb. Boiss. ser. 1, 5: 1050, t. 18, f. 2. 1897, may possibly belong here but, in any case, it



will not replace *Ipomoea sepacuitensis* because of the older *Ipomoea campanulata* L.

***Ipomoea sessilis* L. Wms. sp. nov.**

Herbae volubiles pergraciles, caules glabri usque ad 1 mm. diametrales. Folia late ovato-cordata, breviter acuminata, utrinque sparse setosa et ciliata, laminae 2-4 cm. longae et plusminusve 2-4 cm. latae; petioli graciles, sparse setosi, quam laminae breviores, 1.5-3 cm. longi; inflorescentiae uniflorae ex axillis foliorum ortae, pedunculus nullus vel subnullus, pedicellus carnosus, obscure aculeolatus et porcatus, plusminusve 0.8 cm. longus; sepala chartacea vel leviter carnosa, ad basin verrucoso-porcata, anguste lanceolata, acuminata et subaristata, 1.5-2 cm. longa, interiores quam exteriores leviter longiores; corolla rosea sed basem albida, anguste campanulata, plusminusve 5-6 cm. longa, extus glabra; capsula ignota.

Delicate twining herb with glabrous stems up to 1 mm. in diameter. Leaves broadly ovate-cordate, shortly acuminate, sparsely setose pubescent on both surfaces and ciliate, the blades 2-4 cm. long and about as broad, the petioles slender, sparsely setose, shorter than the blade, 1.5-3 cm. long; inflorescences of a single flower borne in the axil of leaves, peduncle none or very short, the pedicel fleshy, obscurely aculeolate and ridged (at least in dry material), up to about 0.8 cm. long; sepals chartaceous to somewhat carnosose, verrucose ridged at the base, narrowly lanceolate, acuminate and subaristate, 1.5-2 cm. long, the outer two slightly longer than the inner three; corolla rose-pink with white at base and in middle of the lobes, narrowly campanulate, about 5-6 cm. long, glabrous outside; capsule unknown.

Guatemala: between Nentón and Miramar, Sierra de los Cuchumatanes, Huehuetenango, alt. 500-800 m., August 29, 1942, *Steyermark 51566* (F, type).

Perhaps most closely related to *I. santae-rosae* Standl. & Steyererm. and originally so determined by Standley. It is easily distinguished from that species which has very different sepals, pedunculate inflorescences—often two or more flowered, and with longer pedicels.

***Ipomoea steerei* (Standl.) L. Wms. comb. nov.**

*Exogonium steerei* Standl. Carnegie Inst. Wash. Publ. 461: 83. 1935.

Mexico: *Steere 1545, 1599* (F).

Guatemala: all Department of Petén, *Contreras 1313, 1374, 1440* (all LL); *Lundell 15903, 16216, 16492* (all LL); *Tun 219* (F).

This is the first report of this species in Guatemala. It must be fairly abundant in the vicinity of Tikal. The species is not closely related to any species known to me, although the leaf structure and the abundant crinkled wool-like hair on the seeds recall *Ipomoea bombycina* (Presl.) Benth. & Hook. The plant is better treated as an *Ipomoea* rather than placed in the closely allied genus *Exogonium*.

***Ipomoea teruae* Molina & Williams sp. nov.**

Herbae grandes volubiles, caules usque ad 4 mm. diametrales vel ultrae. Folia suborbiculari-ovata, basi cordata, apice acuta vel acuminata, subtus dense sericeo-pubescentes, super glabra; petioli gracilis, pilosi; inflorescentiae pauciflorae, pedunculi crassi, pilosi; calyx usque ad 1 cm. longus, coriaceus, lobi late ovati aut suborbiculares, subaequales, cochleati; corolla campanulata, lilacina, extus glabra; capsula ignota.

Large twining herbaceous vines, the puberulent stems to 4 mm. or more in diameter. Leaves suborbicular-ovate, cordate, the apex acute or short acuminate, the blade 4-7 cm. long and as broad, densely sericeous pubescent below, glabrous or nearly so above, petioles pubescent, 1.5-4 cm. long; inflorescence about as long as or longer than the subtending leaves, dichasioid, few-flowered, peduncle stout, 5-8 cm. long, pilose, pedicels 1.5-2 cm. long, stout, puberulent; calyx glabrous, about 1 cm. long, the lobes broadly ovate or suborbicular, apex obtuse or rounded, the outer ones only slightly shorter, cochleate, the margins chartaceous; corolla lilac, campanulate, glabrous outside, 4-5 cm. long, the stamens reaching to about the middle; capsule and seeds unknown.

Guatemala: flowers lilac, vine climbing over tree, mixed mountain forest, mountain slopes above Lake Atitlán, about 3-5 km. west of Panajachel, Sololá, alt. 2,100 m., December 6-7, 1963, *Williams, Molina & Williams 25331* (type, F; EAP).

This species is distinguished from the many in Guatemala, Mexico, and Central America by the combination of very broad leaves, sericeous below, and the relatively large, broad, cucullate calyx lobes. It is an attractive species, as are most *Ipomoeas*, which we are pleased to name for our field companion of many years. The high elevation at which the species is found is unusual.

***Ipomoea tyrianthina*** Lindl. Bot. Reg. 24: Misc. 87. 1838. *Pharbitis tyrianthina* Hook. Bot. Mag. 49: t. 4024. 1843. *Pharbitis longipedunculata* Mart. & Gal. Bull. Acad. Brux. 12, 2: 271. 1845. *Ipomoea longipedunculata* Hemsl. Biol. Cent. Am. Bot. 2: 389. 1882. *Convolvulus superbus* HBK. Nov. Gen. & Sp. 3: 103. 1819. *Ipomoea superba* G. Don, Gen. Syst. 4: 275. 1838, not of others.

The plants which shall appear under this name in a forthcoming part of the "Flora of Guatemala" are among the most attractive of those to be found in Central America. A method of constantly distinguishing the species from *Ipomoea purpurea* (L.) Roth is not

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FIG. 2. *Ipomoea steerei*. A, habit of plant,  $\times \frac{1}{2}$ ; B, corolla dissected to show anthers,  $\times 1$ ; C, ovary showing disc below and constriction at base of style,  $\times 5$ ; D, calyx and pistil,  $\times 1$ ; E, seed with dense coma,  $\times 1\frac{1}{2}$ ; F, mature capsule,  $\times 1\frac{1}{2}$ ; G, under surface of leaf enlarged to show dense sericeous pubescence.



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*Chelidonium majus* (L.) Pers.

known to me. It is possible that monographic studies may indicate that the names given above should be added to the already formidable list of synonyms of *I. purpurea*.

The range is Mexico, Guatemala, and Honduras.

***Ipomoea umbraticola*** House, Ann. N. Y. Acad. Sci. 18: 259. 1908.

This species was described by House from *Tonduz 13677*, a specimen from Nicoya Peninsula of Costa Rica, is also to be found in El Salvador (*Calderón 1321* (US), *2587* (F); *Standley 19247* (US), and may be expected along the dry Pacific coast of Honduras and perhaps onward into Guatemala. The species is a coarse one with very large leaves, paleaceous coriaceous sepals about 5 mm. long, and funnelform purple corollas 3.5–4 cm. long.

#### HAMAMELIDACEAE

***Molinadendron*** Endress, Bot. Jahrb. 89: 355. 1969.

Dr. Peter Endress, of the Botanical Museum at the University of Zurich was in Guatemala with us early in 1969. He had come to the region especially to find the three species of trees that had been placed in the genus *Distylium* of the Hamamelidaceae—one from Guatemala, one from Honduras, and one from Mexico. He was fortunate in finding material of all three species to be used for anatomical and morphological studies.

In his discussion of the new genus, which he dedicates to Antonio Molina R.,<sup>1</sup> Dr. Endress says that *Molinadendron* differs from *Distylium* of Old World distribution in having spicate inflorescences without terminal flowers (not paniculate and with terminal flowers); in having persistent (not deciduous) floral bracts; in having a true calyx (not a pseudocalyx); in the bivalvate anther dehiscence (not simple longitudinal splitting); and in having a subinferior ovary (not superior).

The three American species that have been ascribed to *Distylium* are transferred to *Molinadendron*, *M. guatemalense* (Radlk. ex Harms) Endress; *M. hondurensis* (Standl.) Endress; and the Mexican *M. sino-loense* (Standl. & Gentry) Endress. We are distributing to several herbaria flowering material of *M. guatemalense* collected near Cobán, Alta Verapaz in January, 1969.

<sup>1</sup> "Dedicatum Antonio Molinae, botanico hondurensi, peritissimo florum centrali-americanarum."

## MELASTOMACEAE

**Topobea pittieri** Cogn. in DC. Monog. Phan. 7: 1088. 1891.

Costa Rica: probable large epiphytic shrub near top of dead tree which had fallen, flowers white, few open, fruit dark rose, the small structures underneath the base of each leaf blade are hollow but contain no insects, primary forest, 8 km. S.E. of Tapantí, prov. Cartago, alt. 1,500 m., June 18, 1967, *Lent 1048*.

## MENISPERMACEAE

**Disciphania calocarpa** Standl. Field Mus. Bot. 4: 305. 1929.

Mexico: vine, tall evergreen forest, in steep canyon at west end of Laguna Ocotal Grande, municipio of Ocosingo, Chiapas, alt. 1,000 m., April 14, 1967, *Breedlove 15671* (DS, F).

The species is new to Mexico. We have specimens from Guatemala, British Honduras, Honduras, and Costa Rica. The species is to be expected in Nicaragua.

## ORCHIDACEAE

**Lepanthopsis floripecten** (Reichb. f.) Ames, Bot. Mus. Leaflet Harv. Univ. 1, No. 9: 11, t. 1933.

*Pleurothallis floripecten* Reichb. f. in Bonpl. 2: 25. 1854.

Guatemala: Finca Santa María, Sacatépequez, *Hand 001* (F).

Previously known to me by specimens from Honduras and Colombia. It has been reported to me in letters by Ruth Oberg from Mexico; by Alfonso Heller from Nicaragua; and by Charles Lankester from Costa Rica. The plant is an inconspicuous one in the field and easily overlooked.

**Palmorchis silvicola** L. Wms. sp. nov.

Herbae terrestres graciles glabrae usque ad 3 dm. altae. Folia elliptica, acuta vel acuminata; inflorescentia terminalis spica pauciflora, bractae lanceolatae acuminatae cucullatae; sepalum dorsale lineari-oblancheolatum cucullatum; sepala lateralia oblancheolata, obtusa leviter arcuata; petala lineari-lanceolata acute arcuata; labellum unguiculatum apice transverse subrhombicum et trilobatum, unguis gracilis ciliolata, lamina transverse subrhombica, lobi laterales ampli et rotundati, labus medius parvus; columna gracilis apice geniculata superficies interior pubescens.

Small, slender, glabrous, terrestrial, probably caespitose, herbs about 3 dm. tall. Stems slender, covered with sheathing leaf bases but becoming naked, internodes 2-3 cm. long; leaves elliptic, acute or acuminate, attenuated into a slender sheathing petiole at the base, the blade 10-15 cm. long and 3.5-5 cm. broad, provided with 7 principal nerves, the petiole about 5 cm. long with the base sheathing the stem; inflorescence a terminal few-flowered spike about 7 cm. long, the slender peduncle with 1-3 bracts about 1 cm. long, the bracts subtending flowers, lanceolate, acuminate, cucullate, up to about 7 mm. long; flowers creamy white, small, maturing one at a time; dorsal sepal linear-ob lanceolate, cucullate, 5-nerved, about 10 mm. long and 2.5 mm. broad; lateral sepals oblanceolate, obtuse, slightly arcuate, 5-nerved, about 9 mm. long and 2.5 mm. broad; petals linear-lanceolate, acute, arcuate, 3-nerved, about 8 mm. long and 2 mm. broad; lip unguiculate, the apical part transversely subrhombic and trilobulate, about 8 mm. long and 5 mm. broad near the apex, claw slender, ciliate with brown hairs along the margin, adnate to the column, lamina of lip transversely subrhombic, the lateral lobes large and rounded, the mid-lobe small and extending back onto the lamina as a thin callus; column slender, geniculate at the apex, the inner face sparsely pubescent with segmented hairs; stigma with a raised margin.

Costa Rica: terrestrial, flowers creamy white, deep forest near airport area, 7 km. west of Rincón de Osa, Osa Peninsula, province of Puntarenas, alt. 30 m., August 10, 1967, *Raven 21694* (type, F).

Schweinfurth and Correll published a review of the genus (Bot. Mus. Leaf. Harv. Univ. 8: 109-119, *t.* 1940) in which the six species known were reviewed. I added a seventh species in 1941 (*P. trilobulata* L. Wms., Ann. Mo. Bot. Gard. 28: 415, *t.* 20) and have quite a distinctive one now from Costa Rica, increasing the species in the genus to eight.

The unusual small central lobe of the lip which is the continuation of a lamillate disk, the shape of the lip, and the pubescence on the lower side of the column and on lower margins of lip are distinctive.

### ***Pogonia ravenii* L. Wms. sp. nov.**

Herbae parvae epiphyticae vel muscicola. Folia elliptico-ovata vel ovata, acuta, sessiles, purpurea; inflorescentia 1-3-flora; sepalum dorsale anguste oblanceolatum leviter cucullatum; sepala lateralia lineari-lanceolata, acuta, leviter arcuata, obscure trinervia; labellum manifeste trilobatum, basi attenuatum, lobus intermedius ovalis vel subrhombicus, lobi laterales falcati, acuti; columna generis.

Small epiphytic or moss-loving herbs from a small corm, 3-7 cm. tall. Stem slender, erect, 0.5-1 mm. in diameter, internodes 3-5 mm. long; leaves purple, elliptic-ovate to ovate, acute, sessile, the base partially surrounding the stem, about 5-10 mm. long and 2-6 mm. broad, the lower ones much smaller, with two extra-axillary processes on stem at base of leaf; inflorescence 1-3 flowers, the flowers in the axil of terminal leaves; flowers erect, purple; dorsal sepal narrowly oblanceolate, somewhat cucullate at the apex, about 11 mm. long and 2 mm. broad; lateral



FIG. 3. *Palmorchis silvicola*. A, habit,  $\times \frac{1}{2}$ ; B, flower partially opened,  $\times 5$ ; C, lip of flower,  $\times 6$ .

sepals linear oblanceolate, acute, slightly arcuate, about 11 mm. long and 2 mm. broad, obscurely 3-nerved; lip prominently 3-lobed, ovate-oblanceolate, attenuate to a long slender base, about 11 mm. long and 5 mm. broad, mid-lobe oval or sub-rhombic, with 3 carinate nerves, about 4 mm. long and 3 mm. broad, the lateral lobes about 4 mm. long and 0.5 mm. broad, falcate, acute; column about as long as the lip, slender.

Costa Rica: leaves and flowers purple, cloud forest above Wilson's finca, 6 km. south of San Vito de Java, province of Puntarenas, alt.  $\pm$ 1,500 m., August 17, 1967, *Raven 21837* (type F; DS).

There have been credited to Central America and Panama five or six species of *Pogonia* subgenus *Triphora*.<sup>1</sup> That added here was discovered by Dr. Raven, for whom it was named, near the Costa Rican-Panamanian frontier. It is distinguished from the species previously described in having the apical third of the lip divided into three prominent lobes with the lateral lobes long and narrow and falcate around the mid-lobe. Mosses and liverworts remaining on the specimens indicate that it was probably epiphytic in a mossy forest.

### ***Telipogon monticola* L. Wms. sp. nov.**

Herbae epiphyticae vel muscicola usque ad 40 cm. longae, repentes vel erectae. Folia oblongo-lanceolata vel oblongo-elliptica, apiculata, acuta; inflorescentia axillaris, subterminalis, gracilis, laxe 1-5-flora (vel pluriflora?); floribus in genere intermediis; sepalis lanceolata vel anguste ovato-lanceolata, acuminata, uninervia; petala late ovata, acuminata, base papillata et sparse sericea, 7-9-nervia; labellum subreniformi-orbiculare, breviter acuminatum, 15-17-nervium, basi callo pubescens ornatum; columna brevis, manifeste pubescens.

Small epiphytic or moss-inhabiting plants to about 30-40 cm. long. The stems leafy, trailing or repent but the apices upright, slender, covered with the persisting leaf-bases, about 1 mm. in diameter, the nodes mostly about 1 cm. long; leaves oblong-lanceolate or oblong-elliptic, fleshy, apiculate, acute, distichous, the bases sheathing the stem, 2.5-4 cm. long and 0.7-1.5 cm. broad; inflorescence axillary, subterminal, slender, laxly 1-5-flowered toward the apex, up to 30 cm. long, bracts subtending flowers ovate, acuminate, cucullate, about 3 mm. long; pedicels slender, to 2 cm. long; flowers medium sized for genus; sepals lanceolate to narrowly ovate lanceolate, acuminate, 1-nerved, 10-12 mm. long and 4-5 mm. broad; petals broadly ovate, acuminate or acute, papillate at the base inside and with a few silky hairs, 7-9-nerved, 13-14 mm. long and 10-11 mm. broad; lip subreniform-orbicular, short acuminate, about 15-17-nerved, about 13 mm. long and about 15 mm. broad, provided at the base with an elevated callus about 5 mm. long and 2 mm. high, free at the apex, the back and sides with silky hairs, the apex muricate-papillate, column short, covered dorsally with spine-like hairs 1-2 mm. long, the anther with spine-like hairs dorsally, rostellum about 3 mm. long, stipe with circular gland reaching to stigma, stigma bare and ball-like, column below the stigma muricate-papillate; ovary long stipitate; fruit unknown.

<sup>1</sup>*Pogonia* subg. *Triphora* (Nutt.) stat. nov., *Triphora* Nutt. Gen. N. Am. Pl. 2: 192. 1818.





FIG. 4. *Telipogon monticola*. A, habit,  $\times \frac{1}{2}$ ; B, flower partly dissected,  $\times 3$ .

Costa Rica: Sphagnum-Lomaria association, Xyris, Puya, Carex, Geranium, Nertera, low boggy depression with some standing water. Cerro de La Muerte, 73 km. from San José on Panamerican highway, alt. 2,275 m., July 22, 1966, *Roger Anderson & Scott Mori 232* (F; WIS); epiphyte in small tree on a slope in shade; perianth deep yellow, sepals with purple cross-bands, petals purplish near base within, column, etc. dark purple, near Villa Mills at km. 97 (5 km. S.E. of Summit) along Interamerican Highway, Cordillera de Talamanca, in forest of small oak trees (15 m.) and smaller trees and shrubs, lat. 9° 33' N., long. 83° 44' W., alt. 3,100 m., Prov. Cartago, June 19, 1968, *Burger & Stolze 5993* (type, F; US).

This species is not closely allied to the several species of *Telipogon* known from Central America and Panama. It is easily distinguished from these by the elongated stems as well as detail of the flowers. It is closely allied to the Colombian *T. angustifolius* HBK. (Nov. Gen. & Sp. Pl. 1: 336, t. 75. 1815) in structure of leaves and stem and in having an elongated inflorescence from a leaf axil, the stem soon growing beyond the initial for the inflorescence. *Telipogon angustifolius* lacks the prominent pubescent lip callus of *T. monticola* and has flowers considerably larger.

### STERCULIACEAE

*Ayenia micrantha* Standl. Journ. Wash. Acad. Sci. 14: 239. 1924; Cristóbal, Opera Lilloana 4: 68, t. 20. 1960.

Mexico: Municipio of Venustiano Carranza, La Trinitaria, Tuxtla Gutiérrez, alt. 2,500-4,200 feet, July-Oct., 1965, *Breedlove 11361, 13248, 13884*.

The species is new to Mexico. Miss Cristóbal in her monograph cited many specimens from Guatemala, El Salvador, and Honduras. *Ayenia simulatrix* Cristóbal, from the Zamorano Valley in Honduras, probably is not distinct from *A. micrantha* Standl.

### SYMPLOCACEAE

*Symplocos excelsa* L. Wms. sp. nov.

Arbores excelsae usque ad 20 m. vel ultrae. Folia late elliptica aut late oblanceolato-elliptica, acuminata, base cuneata vel acuta, denticulata, subtus sparse hispidula, petioli per breves; inflorescentia pauci-pluriflorae, fasciculae axillares per breves; calyx strigillosum, lobi suborbiculares, obtusi, marginibus glandulosi; corolla parva, lobi oblongi aut oblongo-oblanceolati, apicibus rotundati; stamina multa; fructus ignoti.

Large trees to 20 m. tall or perhaps more, the branchlets grayish, smooth, hispidulous with short simple or brachiate hairs, becoming glabrous. Leaves broadly elliptic to broadly oblanceolate-elliptic, acuminate, cuneate or acute to the base, closely denticulate, with 5-7 pairs of lateral nerves, glabrous above except at the base, sparsely hispidulous below with simple or crisped hairs, the blade bicolored, darkest above, 12-16 cm. long and 3.5-6.5 cm. broad, petioles short, mostly 5-7 mm. long, hispidulous; inflorescence a few-several-flowered axillary fascicle, often subcapitate and less than 1.5 cm. long, densely appressed strigillose, pedicels very short or essentially lacking; calyx densely appressed strigillose, with included ovary about 5 mm. long and as broad at anthesis, lobes 5, the outer two about 3 mm. long and as broad, suborbicular, obtuse, the margin with dark yellow glands, the inner lobes slightly smaller and often without glands; corolla small, sympetalous but lobed to near the base, 8-10 mm. long, the lobes 5, 2-3 mm. broad, oblong or oblong-oblanceolate, apex rounded, glabrous or with a few hairs toward the apex; stamens many, their filaments connate and forming a short corona, adnate below the middle of the corolla; style about as long as the corolla, the stigma subcapitate; fruits unknown.

Mexico: flowers pink, tree 50 feet tall, slopes with *Pinus* and *Liquidambar* at Lago de Monte Bello, 25 miles east of La Trinitaria, Municipio of Trinitaria, Chiapas, alt. 5,200 feet, August 17, 1966, *Breedlove 15013* (type, F; DS).

The larger species of *Symplocos* are among the more attractive trees of the tropical forest, due in part to the symmetrical form and to the very dark green leaves, usually of a lighter green below. Trees of *Symplocos* are usually an uncommon element of the forest.

Like *Symplocos johnsonii* Standl., the present species has the largest leaves of the Mexican-Central American species and is equally large in size. *Symplocos excelsa* is easily distinguished from the others by the large acuminate leaves with short petioles and the curious small glands on the sepals.

## THEOPHRASTACEAE

### *Clavija septentrionalis* L. Wms. sp. nov.

Arbor parva (indivisa?) usque ad 8 m. Folia oblanceolata acuminata usque ad basim dentata glabra petiolis incrassatis; inflorescentia racemosa axillaris, flores sessiles verticillati; calyx campanulatus lobis rotundatis obscure pilosis; corolla campanulata intus pilosa, lobis late ovatis obscure ciliatis; staminibus corolla aequalibus; staminodia brevia subglobosa; flores staminati vel polygamodioecii et fructus ignoti.

Dioecious or perhaps polygamodioecious trees about 8 m. tall. Leaves tough, papery, oblanceolate, acuminate, shallowly dentate almost to the base, with about 25 pairs of mostly alternating secondary nerves, with numerous tertiary nerves connecting the secondaries, glabrous, blade 45-60 cm. long and 13-17 cm. broad, the petioles thickened, terete, 5-7 cm. long and 0.4-0.5 cm. in diameter, apical

portion possibly serving as an articulation, shrunken in drying, with 1-several small glands at juncture with the blade on upper side; inflorescences racemose, axillary but originating well above the attachment of the petiole, about 20-30 cm. long, puberulent; the cream-colored staminate flowers borne in verticels of one or few flowers, each sessile and subtended by small ovate or oval bracts, about 3-5 mm. long; calyx campanulate, about 1.5 mm. long, obscurely pilose, lobes rounded, about 0.5 mm. long; corolla campanulate, about 5 mm. long, with a prominent ring of pilose pubescence at the middle within, the lobes broadly ovate, obscurely ciliolate; stamens about as long as the corolla; staminodia short, subglobose, rather large; pistillate or perfect flowers unknown; fruits unknown.

Nicaragua: tree ca. 8 m., leaves tough-papery, flowers cream, in low wet forest ca. Laimos Creek, ca. 15 km. S.W. of Waspam, department of Cabo Gracias a Dios, alt. 50-100 feet, March 7, 1961, *Bunting & Licht 390* (F, type; NY; US).

The genus *Clavija* has its center of distribution in South America, with eight species in North America—two of these in the Caribbean and the remainder in Panama, Costa Rica, and now Nicaragua. Only one species is recognized as occurring in both North and South America, *C. lehmannii* Mez.

This species seems most closely related to *C. costaricana* Pittier and *C. mezii* Pittier (ex char.). It is easily distinguished superficially from these and all others by the serrations of the leaves which extend to or almost to the base of the blade. The strong thick petiole with an articulation at its apex with the blade seems not to occur in any other species available for study. The glands at the juncture of the petiole on the blade are unusual. The sessile flowers also help to distinguish this species from the two allied species mentioned above.